Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (currently amended) An acetylene generation and supply system comprising:

an acetylene generation device configured to generate acetylene from at least one reactant feed stream including at least one carbon containing material; and

an acetylene processing device oriented in-line and downstream from the acetylene generation device to receive and process generated acetylene from the acetylene generation device so as to consume at least a portion of the generated acetylene upon operation of the acetylene processing device, wherein the at least one carbon containing material is at least one of natural gas, methane and C_2-C_8 alkyl and/or aryl hydrocarbons.

2. (previously presented) The system of claim 1, wherein the acetylene generation device comprises an arc plasma reactor including an anode and a cathode disposed within the reactor, and a power source connected to the anode and the cathode to generate plasma within the reactor.

3. (previously presented) The system of claim 1, wherein the process device comprises a carburization device including at least one chamber to receive and process steel components, the carburization device being configured to perform a carburization process including heat treating and quenching the steel components.

4. (canceled)

5. (previously presented) The system of claim 1, wherein the at least one carbon containing material comprises methane.

6. (previously presented) The system of claim 1, further comprising:

at least one storage cylinder connectable with the acetylene generation device to received and store acetylene generated by the acetylene generation device.

7. (previously presented) The system of claim 6, wherein the at least one storage cylinder is free of acetone.

8. (previously presented) The system of claim 6, wherein the at least one storage cylinder is disposed in-line between the acetylene generation device and the acetylene processing device.

9. (previously presented) The system of claim 1, further comprising:

a purification unit disposed in-line between the acetylene generation device and the acetylene processing device.

10. (currently amended) A method of generating and supplying acetylene, comprising:

generating acetylene in an acetylene generation device by directing at least one reactant feed stream including at least one carbon containing material into the acetylene generation device;

directing the generated acetylene to an acetylene processing device disposed in-line and downstream from the acetylene generation device; and

operating the acetylene processing device to consume at least a portion of the acetylene, wherein the at least one carbon containing material is at least one of natural gas, methane and C_2-C_8 alkyl and/or aryl hydrocarbons.

11. (previously presented) The method of claim 10, wherein the acetylene generation device comprises an arc plasma reactor including an anode and a cathode disposed within the reactor, and the acetylene is generated by generating plasma within the reactor via a power supply connected to the anode and the cathode.

12. (currently amended) The method of claim 10, wherein the process device comprises a carburization device, and operation of the carburization device comprises:

receiving and heat treating steel components within at least one chamber of the carburization device; and

introducing the generated acetylene into the at least one chamber to facilitate absorption and diffusion of carbon at the steel components.

13. (canceled)

14. (previously presented) The method of claim 10, wherein the at least one carbon containing material comprises methane.

15. (previously presented) The method of claim 10, further comprising:

prior to directing the generated acetylene to an acetylene processing device, storing the generated acetylene in at least one storage cylinder.

16. (previously presented) The method of claim 15, wherein the at least one storage cylinder is disposed in-line between the acetylene generation device and the acetylene processing device.

17. (previously presented) The method of claim 15, wherein the at least one storage cylinder is free of acetone.

18. (previously presented) The method of claim 10, further comprising:

directing the generated acetylene through at least one purification unit prior to prior to directing the generated acetylene to an acetylene processing device.

19. (currently amended) An acetylene generation and supply system comprising:

a means for generating acetylene utilizing from at least one feed stream including at least one carbon containing material; and

a means for consuming at least a portion of the generated acetylene;

wherein the means for consuming is disposed in-line and downstream from the means for generating acetylene, wherein the at least one carbon containing material is at least one of natural gas, methane and C_2-C_8 alkyl and/or aryl hydrocarbons.